Litton BIONETICS

MUTAGENIC EVALUATION OF
COMPOUND 007758012
POTASSIUM BROMATE (with Magnesium
Carbonate) GRANULAR
(73-71)

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Mutagenic Evaluation of Compound FDA 73-71 (**Potassium Bromate (with Magnesium Carbonate) Granular**) 4/30/75

X35

LBI PROJECT # 2468

MUTAGENIC EVALUATION OF

COMPOUND 007758012

POTASSIUM BROMATE (with Magnesium Carbonate) GRANULAR

(73-71) Misc

SUBMITTED TO

FOOD & DRUG ADMINISTRATION
DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
ROCKVILLE, MARYLAND

SUBMITTED BY

LITTON BIONETICS, INC.
5516 NICHOLSON LANE
KENSINGTON, MARYLAND

APRIL 30, 1975

Litton BIONETICS

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EVALUATION SUMMARY

Compound 007758012, Potassium Bromate, did not exhibit genetic activity in any of the assays employed in this evaluation.

DATE: 04/30/75

SPONSOR: Food and Drug Administration, Contract Number 223-74-2104

SUBJECT: Evaluation of Test Compound 007758012, Potassium Bromate (with Magnesium Carbonate) Granular

I. OBJECTIVE

The objective of this study was to evaluate the test compound for genetic activity in microbial assays with and without the addition of mammalian metabolic activation preparations.

II. MATERIALS

A. Test Compound

1. Date Received: August, 1974

2. Description: White granular powder

B. Indicator Microorganisms

The following strains of indicator microorganisms were used in the evaluation:

Yeast Strain: *Saccharomyces cerevisiae*, strain D4

Bacteria Strains: *Salmonella typhimurium*, strains: TA-1535
TA-1537
TA-1538

C. Reaction Mixture

The following reaction mixture was employed in the activation tests:

Component	Final Concentration/ml
1. TPN (sodium salt)	6 μ M
2. Isocitric acid	49 μ M
3. Tris buffer, pH 7.4	28 μ M
4. $MgCl_2$	1.7 μ M
5. Tissue homogenate fraction	72 mg

D. Tissue Homogenates and Supernatant

The tissue homogenates and 9,000 x g supernatants were prepared from tissues of the following mammalian species: Mouse-ICR random bred adult males; rat-Sprague-Dawley adult males; and primate-Macaca mulatta adult males.

E. Positive Control Compounds

Table 1 lists chemicals for positive controls in the direct and activation assays.

TABLE 1

POSITIVE CONTROLS USED IN DIRECT AND ACTIVATION ASSAYS

Assay	Chemical[a]	Solvent	Probable Mutagenic Specificity
Non-activation	Ethyl methanesulfonate	Water or saline	BPS
	2-Nitrofluorene	Dimethylsulfoxide[c]	FS
	Quinacrine mustard	Water or saline	FS
Activation	Dimethylnitrosamine	Water or saline	BPS
	2-Acetylaminofluorene	Dimethylsulfoxide[c]	FS

[a] Concentrations given in the Results Section
[b] BPS = base-pair substitution; FS = frameshift
[c] Previously shown to be non-mutagenic

III. METHODS

A. Toxicity

The solubility, toxicity and doses for all chemicals were determined prior to screening.

Each chemical was tested for survival against the specific indicator strains over a range of doses to determine the 50% survival dose. Bacteria were tested in phosphate buffer, pH 7.4, for one hour at 37°C on a shaker. Yeasts were tested in phosphate buffer, pH 7.4, for four hours at 30°C on a shaker. The 50% survival curve and the 1/4 and 1/2 50% doses calculated.

If no toxicity was obtained for a chemical with a given strain, then a maximum dose of 5% (w/v) was used against the strain.

Unless otherwise specified, the doses calculated for the tests in buffer were applied to the activation tests. The solubility of the test chemical under treatment conditions is stated in the Results Section.

B. Plate Tests

In the nonactivation procedure, approximately 10^9 cells of a log-phase culture of the bacterial indicator strains were spread over the surface of a minimal plate, and a measured amount of the test chemical was placed in the center of the test plate. In activation tests, the test chemical was added to the cells, and an aliquot of the mixture was spread on the surface of the test plate. The reaction mixture (0.1 ml) plus tissue extract was then spotted on the surface of the plate. Positive and solvent controls were included. All plates were incubated at 37°C for four days and then scored. Each compound (test, positive control and solvent control) was done in duplicate. Concentrations of the positive control compounds are listed in the Results Section.

C. Suspension Tests

1. Non activation

Log-phase bacteria and stationary-phase yeast cultures of the indicator organisms were grown in complete broth, washed and resuspended in 0.9% saline to densities of 1×10^9 cells/ml and 5×10^7 cells/ml, respectively. This constituted the working stock for tests of a group of test chemicals and their respective controls. Tests were conducted in plastic tissue culture plates. Cells plus appropriate volume(s) of the test chemical were added to the wells to give a final volume of 1.5 ml. The solvent replaced the test chemical in the negative controls. Treatment was at 30°C for four hours for yeast tests and at 37°C for one hour for bacterial tests. All flasks were shaken during treatment. Following treatment, the plates were set on ice. Aliquots of cells were removed, diluted in sterile saline (4°C) and plated on the appropriate complete media. Undiluted samples from flasks containing the bacteria were plated on minimal selective medium in reversion experiments. Samples from a 10^{-1} dilution of treated cells were plated on the selected media for enumeration of gene conversion with strain D4. Bacterial plates were scored after incubation for 48 hours at 37°C. The yeast plates were incubated at 30°C for 3-5 days before scoring.

2. Activation

Bacteria and yeast cells were grown and prepared as described in the non activation tests. Measured amounts of the test and control chemicals plus 0.25 ml of the stock-cell suspension were added to wells of the Linbro plate containing the appropriate tissue fraction and reaction mixture. All flasks (bacteria and yeast) were incubated at 37°C in an oxygen atmosphere with shaking. The treatment times as well as the dilutions, plating procedures and scoring of the plates were the same as described for non activation tests.

D. Preparation of Tissue Homogenates and 9,000 x g Cell Fractions

Male animals (sufficient to provide the necessary quantities tissues) were killed by cranial blow, decapitated and bled. Organs were immediately dissected from the animal using aseptic techniques and placed in ice-cold 0.25 M sucrose buffered with Tris at pH of 7.4. Upon collection of the desired quantity of organs, they were washed twice with fresh buffered sucrose and completely homogenized with a motor-driven homogenizing unit at 4°C. The whole organ homogenate obtained from this step was divided into two samples. One sample was frozen at -80°C and the other was centrifuged for 20 minutes at 9,000 x g in a refrigerated centrifuge. The supernatant from the centrifuged sample was retained and frozen at -80°C. These two frozen samples were used for the activation studies.

E. Data Recording and Reporting

Following the specified incubation periods all population plates were scored by an automatic colony counter and the results from each plate of a set were recorded, in ink, on data processing forms. All minimal or other types of selective media plates were hand scored and the results recorded along with the respective population data. Other relevant experimental data were recorded on experimental definition forms. For bacteria strains the number of colonies recorded from either the population or selective plates represents that number in 1 ml of test suspension plated. The numbers recorded for the yeast strain D4 represent the number in 0.5 ml of test suspension plated. Data was then processed and printed from a computer program.

IV. RESULTS SECTION

A. Solubility Properties of the Test Compound

1. Name or code designation of the test compound:

007758012, Potassium Bromate (with Magnesium Carbonate) Granular

2. Test solvent: Saline

3. Solubility of the test compound under treatment conditions:

Soluble under Treatment Conditions

4. Additional comments:

White granular powder

B. Toxicity and Dosage Determinations for the Test Compound
007758012

1. Test date for toxicity determination: 01/28/75

2. The 50% survival level was determined for bacteria and yeast indicator organisms by conducting survival curves with the test compound at the following concentrations:

Percent Concentration (w/v or v/v)
10.0
1.0
0.1
0.01
0.001

3. Concentrations of the test compound used in the mutagenicity tests:

Dose	Percent Concentration	
	Bacteria	Yeast
1/4 50% Survival	0.625	0.5
1/2 50% Survival	1.25	1.0
50% Survival	2.50	2.0
Plate Tests	1.25	--

IV. SUMMARY OF TEST RESULTS

Plate Tests

A. Name or code designation of the test compound: 007758012

B. Test date: 02/14/75

C. Concentration of the test compound: 1.25%

Test	Species	Tissue	TA-1535		TA-1537		TA-1538	
			1	2	1	2	1	2
1. Non-activation								
Solvent Control	---	---	43	78	11	14	26	6
Positive Control[a]	---	---	$>10^3$	$>10^3$	209	301	47	40
Test Compound	---	---	38	26	6	8	4	4
2. Activation								
Negative Control	---	---	40	90	14	22	14	4
Solvent Control	---	---	27	89	10	33	17	18
Reaction Mixture Control	---	---	47	31	12	34	20	22
Positive Control[b]	Mouse	Liver	>500	>500	83	75	>200	>200
Positive Control		Lung	59	59	10	7	20	10
Positive Control		Testes	42	60	11	10	11	10
Positive Control	Rat	Liver	>300	>300	83	86	$>10^2$	$>10^2$
Positive Control		Lung	63	77	10	7	19	9
Positive Control		Testes	44	61	10	8	12	9
Positive Control	Monkey	Liver	>100	>100	41	34	>100	93
Positive Control		Lung	71	54	9	8	20	6
Positive Control		Testes	47	61	10	9	13	10
Test Compound	Mouse	Liver	22	26	1	5	3	3
Test Compound		Lung	42	19	2	1	4	1
Test Compound		Testes	22	10	1	2	1	0
Test Compound	Rat	Liver	23	28	0	5	1	3
Test Compound		Lung	40	21	3	1	4	1
Test Compound		Testes	22	13	2	2	2	0
Test Compound	Monkey	Liver	25	26	0	5	1	5
Test Compound		Lung	39	21	3	1	4	1
Test Compound		Testes	17	9	0	3	2	1

a TA-1535 EMS 10 µl/plate
TA-1537 QM 20 µg/plate
TA-1538 NF 100 µg/plate

b TA-1535 DMNA 50 µ m/plate
TA-1537 AAF 100 µ g/plate
TA-1538 AAF 100 µ g/plate

DATA TABLE TERMS AND ABBREVIATIONS

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
COMPOUND	Client designated compound number appears in this column.
TEST CODES	NAN = Non Activation: Solvent Control NAP = Non Activation: Positive Control NA1 = Non Activation: Test Compound Dose 1 NA2, etc. = Reflects the other dose level(s) A+C = Negative Chemical Control A-C = Activation: Solvent Control ACP = Activation: Positive Control ACT = Activation: Test Compound A+T = Activation: Tissue Control LI = Liver Tissue Activation Fraction LU = Lung Tissue Activation Fraction KI = Kidney Tissue Activation Fraction TE = Testes Tissue Activation Fraction 1,2, etc. = Dose Levels
CONCENTRATION	All test compound dose levels are expressed as a whole number followed by an exponent (negative) identified by the appropriate units. Example: 0025-2PCT = 0.25 percent concentration
POPU	Total number of viable cells in the plating sample raised to some exponent printed directly below the abbreviation (i.e., EP + 6 = X 10^6).
MUT 1	Total number of mutants or convertants obtained from the sample plated raised to some exponent printed directly below the abbreviation (i.e., EP + 0 = X 10^6). For strain D4, MUT 1 represents the number of ADE+ convertants.
MUT 2	Only used for strain D4 and represents the number of TRY+ convertants in the plated sample.
FREQ 1	The calculated mutation or gene conversion frequency times the negative exponent written directly below. For strain D4, FREQ 1 represents the ADE+ value.
FREQ 2	Only used for strain D4 and represents the TRY+ conversion frequency.
CONTAM	Presence of contamination on any plates.

DATA TABLE TERMS AND ABBREVIATIONS (continued)

ABBREVIATION OR TERM	DEFINITION OR EXPLANATION
AAF	2-Acetylaminofluorene
DMSO	Dimethylsulfoxide
DMN	Dimethylnitrosamine
EMS	Ethyl Methanesulfonate
QM	Quinacrine Mustard
NF	Nitrofluorene
SPECIES	Animal Strains
SPRDAW	Sprague Dawley Rats
ICRFLO	Flow ICR Random Bred Mice
RHESUS	Rhesus Monkey (Macaca mulatta)
MIXEDB	Dog, Mixed Breed
NEWZEA	New Zealand White Rabbit

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 04/25/75

SPECIES COMPOUND 007758012

TEST	ORG	TA1535 HIS EX-8	TA1537 HIS EX-8	TA1537 HIS EX-8	TA1538 HIS EX-8	000004 ADE EX-5	000004 TRY EX-5
NAN		1.60	5.71	1.97	4.89	2.89	46.67
NAP		1158.63	73.09		200.22	24.55	77.84
NA1		0.65	1.86		3.85	7.52	61.28
NA2		1.99	18.78	2.36	1.19	1.40	35.93

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 04/25/75

SPECIES ICRFLO COMPOUND 007758012

TEST	ORG	TA1535 HIS EX-8	TA1537 HIS EX-8	TA1538 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	5.02	7.20	3.61	3.84	19.18
ACT	A+T	16.14	2.38	4.54	6.72	49.80
ACT	A-C	3.28	7.02	8.13	2.60	32.95
ACT	PLI	538.06	17.26	25.91	6.95	106.58
ACT	PLU	5.71	8.54	4.83	6.50	72.42
ACT	PTE	14.00	4.13	3.04	5.84	81.70
ACT	LI1	7.76	6.21	9.50	4.48	54.78
ACT	LI2	5.60	2.33	11.27	4.77	75.66
ACT	LU1	4.97	5.56	7.77	5.69	55.21
ACT	LU2	5.59	7.63	7.14	6.25	45.72
ACT	TE1	8.88	7.11	5.93	6.56	50.98
ACT	TE2	7.53	9.76	7.85	7.42	62.92

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 04/25/75

SPECIES SPRDAW COMPOUND 007758012

TEST	ORG	TA1535 HIS EX-8	TA1537 HIS EX-8	TA1537 HIS EX-8	TA1538 HIS EX-8	0000D4 ADE EX-5	0000D4 TRY EX-5
ACT	A+C	1.61	5.41		1.64	3.41	3.32
ACT	A+T		2.25		1.70	1.11	1.01
ACT	A-C	1.49	3.04	1.97	1.65	2.45	3.15
ACT	PLI	19.21	11.93		13.62	6.67	10.95
ACT	PLU	2.07	1.90		1.49	1.75	3.06
ACT	PTE	3.56	2.84		1.74	2.17	2.96
ACT	LI1	6.10	6.10		2.00	2.60	3.40
ACT	LI2	7.28	3.84		3.09	2.95	3.54
ACT	LU1	4.34	13.44	1.71	1.98	3.55	3.04
ACT	LU2	3.15	7.77		2.24	1.81	2.58
ACT	TE1	5.39	17.12	3.17	2.56	2.50	3.75
ACT	TE2	4.37	7.17		2.01	2.59	4.43

LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
REPORT EXR34

COMPOUND FREQUENCY SUMMARY REPORT 04/25/75

SPECIES RHESUS COMPOUND 007758012

TEST	ORG	TA1535 HIS EX-8	TA1537 HIS EX-8	TA1538 HIS EX-8	000004 ADE EX-5	000004 TRY EX-5
ACT	A+C	18.56	2.33	5.85	2.22	3.02
ACT	A+T	18.18	2.76	8.85	3.08	2.73
ACT	A-C	13.67	2.66	4.20	3.02	1.99
ACT	PLI	283.75	9.04	86.14	5.98	5.82
ACT	PLU	12.85	2.33	4.58	2.41	2.81
ACT	PTE	15.37	1.56	5.62	2.99	3.95
ACT	LI1	12.22	1.89	9.66	2.75	5.50
ACT	LI2	15.53	2.37	10.24	2.93	4.06
ACT	LU1	12.20	2.89	6.91	2.16	5.66
ACT	LU2	11.87	2.79	5.21	2.04	3.41
ACT	TE1	7.19	2.51	5.05	2.63	4.93
ACT	TE2	10.32	3.31	6.59	1.97	6.37

V. INTERPRETATION OF RESULTS AND CONCLUSIONS

Compound 007758012, Potassium Bromate, was evaluated for genetic activity in a series of in vitro microbial assays with and without metabolic activation. The following results were obtained:

A. Salmonella typhimurium

1. Plate Tests

At a concentration of 1.25%, 007758012 was not mutagenic for the bacterial indicator organisms in either direct or activation plate tests.

2. Nonactivation suspension tests

The results of these tests were negative.

3. Activation suspension tests

The results of these tests were negative.

B. Saccharomyces cerevisiae

1. Nonactivation suspension tests

The results of these tests were negative.

2. Activation suspension tests

The results of these tests were negative.

C. Conclusions

Compound 007758012, Potassium Bromate, did not exhibit genetic activity in any of the assays employed in this evaluation.

Submitted by:

David Brusick

David Brusick, Ph.D.
Director of Genetics

APPENDIX

Tabulation of Data

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 502802 DETECTOR TA1535 SPECIES DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	0312	0005	1.60	0
	NAP		EMS 0.002 %	0394	4565	1158.63	0
007758012	NA1		0125-2 PCT.	0465	0003	0.65	0
007758012	NA2		0625-3 PCT.	0351	0007	1.99	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504102 DETECTOR TA1537 SPECIES DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	1435	0082	5.71	0
	NAP		QM 1.0 UG/ML	1293	0945	73.09	0
007758012	NA1		0125-2 PCT.	1183	0022	1.86	1
007758012	NA2		0625-3 PCT.	1342	0252	18.78	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 506211 DETECTOR TA1537 SPECIES DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		SALINE	1523	0030	1.97	0
007758012	NA2		0625-3 PCT.	1143	0027	2.36	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 507802 DETECTOR TA1538 SPECIES DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	NAN		DMSO	0327	0016	4.89	0
	NAP		NF 125 UG-ML	0465	0931	200.22	0
007758012	NA1		0125-2 PCT.	0416	0016	3.85	0
007758012	NA2		0625-3 PCT.	0503	0006	1.19	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504104 DETECTOR 0000D4 SPECIES DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	NAN		SALINE	0450	0013	0210	2.89	46.67	4
	NAP		EMS 1.0 %	0501	0123	0390	24.55	77.84	6
007758012	NA1		0001-0 PCT.	0359	0027	0220	7.52	61.28	0
007758012	NA2		0005-1 PCT.	0501	0007	0180	1.40	35.93	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 503501 DETECTOR TA1535 SPECIES ICRFLO DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0697	0035	5.02	0
	A+T		***NO MATCH***	0694	0112	16.14	0
	A-C		SALINE	0762	0025	3.28	0
	ACP	LI	DMN 50 UM/ML	0762	4100	538.06	0
	ACP	LU	DMN 50 UM/ML	0840	0048	5.71	0
	ACP	TE	DMN 50 UM/ML	0750	0105	14.00	0
007758012	ACT	LI1	0125-2 PCT.	0670	0052	7.76	2
007758012	ACT	LI2	0625-3 PCT.	0839	0047	5.60	0
007758012	ACT	LU1	0125-2 PCT.	0765	0038	4.97	0
007758012	ACT	LU2	0625-3 PCT.	0895	0050	5.59	2
007758012	ACT	TE1	0125-2 PCT.	0766	0068	8.88	2
007758012	ACT	TE2	0625-3 PCT.	0744	0056	7.53	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 503801 DETECTOR TA1537 SPECIES ICRFLO DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	1860	0134	7.20	0
	A+T		***NO MATCH***	3195	0076	2.38	0
	A-C		DMSO	1653	0116	7.02	0
	ACP	LI	AAF 800 UG/ML	2126	0367	17.26	0
	ACP	LU	AAF 800 UG/ML	0972	0083	8.54	2
	ACP	TE	AAF 800 UG/ML	1452	0060	4.13	0
007758012	ACT	LI1	0125-2 PCT.	0999	0062	6.21	0
007758012	ACT	LI2	0625-3 PCT.	1372	0032	2.33	0
007758012	ACT	LU1	0125-2 PCT.	0917	0051	5.56	2
007758012	ACT	LU2	0625-3 PCT.	0826	0063	7.63	2
007758012	ACT	TE1	0125-2 PCT.	0717	0051	7.11	2
007758012	ACT	TE2	0625-3 PCT.	0615	0060	9.76	1

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 503601 DETECTOR TA1538 SPECIES ICRFLO DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0859	0031	3.61	0
	A+T		***NO MATCH***	1013	0046	4.54	0
	A-C		DMSO	0541	0044	8.13	0
	ACP	LI	AAF 800 UG/ML	0602	0156	25.91	0
	ACP	LU	AAF 800 UG/ML	0766	0037	4.83	0
	ACP	TE	AAF 800 UG/ML	1348	0041	3.04	2
007758012	ACT	LI1	0125-2 PCT.	0558	0053	9.50	0
007758012	ACT	LI2	0625-3 PCT.	0497	0056	11.27	0
007758012	ACT	LU1	0125-2 PCT.	0528	0041	7.77	0
007758012	ACT	LU2	0625-3 PCT.	0546	0039	7.14	0
007758012	ACT	TE1	0125-2 PCT.	0624	0037	5.93	0
007758012	ACT	TE2	0625-3 PCT.	0497	0039	7.85	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 503701 DETECTOR 0000D4 SPECIES ICRFLO DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	0417	0016	0080	3.84	19.18	5
	A+T		***NO MATCH***	0506	0034	0252	6.72	49.80	4
	A-C		SALINE	0346	0009	0114	2.60	32.95	0
	ACP	LI	DMN 90 UM/ML	0532	0037	0567	6.95	106.58	0
	ACP	LU	DMN 90 UM/ML	0446	0029	0323	6.50	72.42	6
	ACP	TE	DMN 90 UM/ML	0377	0022	0308	5.84	81.70	0
007758012	ACT	LI1	0001-0 PCT.	0513	0023	0281	4.48	54.78	0
007758012	ACT	LI2	0005-1 PCT.	0419	0020	0317	4.77	75.66	0
007758012	ACT	LU1	0001-0 PCT.	0422	0024	0233	5.69	55.21	0
007758012	ACT	LU2	0005-1 PCT.	0608	0038	0278	6.25	45.72	0
007758012	ACT	TE1	0001-0 PCT.	0457	0030	0233	6.56	50.98	0
007758012	ACT	TE2	0005-1 PCT.	0391	0029	0246	7.42	62.92	4

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 502801 DETECTOR TA1535 SPECIES SPRDAW DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	0496	0008	1.61	0
	A-C		SALINE	0941	0014	1.49	0
	ACP	LI	DMN 50 UM/ML	0229	0044	19.21	2
	ACP	LU	DMN 50 UM/ML	0242	0005	2.07	0
	ACP	TE	DMN 50 UM/ML	0281	0010	3.56	2
007758012	ACT	LI1	0125-2 PCT.	0557	0034	6.10	0
007758012	ACT	LI2	0625-3 PCT.	0522	0038	7.28	0
007758012	ACT	LU1	0125-2 PCT.	0484	0021	4.34	0
007758012	ACT	LU2	0625-3 PCT.	0445	0014	3.15	2
007758012	ACT	TE1	0125-2 PCT.	0519	0028	5.39	0
007758012	ACT	TE2	0625-3 PCT.	0503	0022	4.37	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504501 DETECTOR TA1537 SPECIES SPRDAW DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	1219	0066	5.41	0
	A+T		***NO MATCH***	1245	0028	2.25	0
	A-C		DMSO	1448	0044	3.04	0
	ACP	LI	AAF 800 UG/ML	0989	0118	11.93	0
	ACP	LU	AAF 800 UG/ML	1319	0025	1.90	0
	ACP	TE	AAF 800 UG/ML	0952	0027	2.84	2
007758012	ACT	LI1	0125-2 PCT.	0492	0030	6.10	3
007758012	ACT	LI2	0625-3 PCT.	0599	0023	3.84	3
007758012	ACT	LU1	0125-2 PCT.	0439	0059	13.44	2
007758012	ACT	LU2	0625-3 PCT.	0412	0032	7.77	3
007758012	ACT	TE1	0125-2 PCT.	0222	0038	17.12	3
007758012	ACT	TE2	0625-3 PCT.	0321	0023	7.17	3

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 506210 DETECTOR TA1537 SPECIES SPRDAW DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A-C		DMSO	1523	0030	1.97	0
007758012	ACT	LU1	0125-2 PCT.	1634	0028	1.71	2
007758012	ACT	TE1	0125-2 PCT.	1516	0048	3.17	2

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504301 DETECTOR TA1538 SPECIES SPRDAW DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	3528	0058	1.64	0
	A+T		***NO MATCH***	4002	0068	1.70	0
	A-C		DMSO	3028	0050	1.65	0
	ACP	LI	AAF 800 UG/ML	2158	0294	13.62	0
	ACP	LU	AAF 800 UG/ML	3414	0051	1.49	0
	ACP	TE	AAF 800 UG/ML	4136	0072	1.74	0
007758012	ACT	LI1	0125-2 PCT.	2694	0054	2.00	0
007758012	ACT	LI2	0625-3 PCT.	1875	0058	3.09	2
007758012	ACT	LU1	0125-2 PCT.	2175	0043	1.98	0
007758012	ACT	LU2	0625-3 PCT.	2415	0054	2.24	0
007758012	ACT	TE1	0125-2 PCT.	2113	0054	2.56	0
007758012	ACT	TE2	0625-3 PCT.	1986	0040	2.01	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504401 DETECTOR 0000D4 SPECIES SPRDAW DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	1085	0037	0036	3.41	3.32	0
	A+T		***NO MATCH***	4064	0045	0041	1.11	1.01	0
	A-C		SALINE	1144	0028	0036	2.45	3.15	0
	ACP	LI	DMN 90 UM/ML	1005	0067	0110	6.67	10.95	0
	ACP	LU	DMN 90 UM/ML	1142	0020	0035	1.75	3.06	0
	ACP	TE	DMN 90 UM/ML	1150	0025	0034	2.17	2.96	0
007758012	ACT	LI1	0001-0 PCT.	1117	0029	0038	2.60	3.40	0
007758012	ACT	LI2	0005-1 PCT.	1185	0035	0042	2.95	3.54	0
007758012	ACT	LU1	0001-0 PCT.	0987	0035	0030	3.55	3.04	0
007758012	ACT	LU2	0005-1 PCT.	1163	0021	0030	1.81	2.58	0
007758012	ACT	TE1	0001-0 PCT.	0959	0024	0036	2.50	3.75	2
007758012	ACT	TE2	0005-1 PCT.	0926	0024	0041	2.59	4.43	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504901 DETECTOR TA1535 SPECIES RHESUS DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		DMN 50 UM/ML	1546	0287	18.56	0
	A+T		***NO MATCH***	2718	0494	18.18	0
	A-C		SALINE	2187	0299	13.67	0
	ACP	LI	DMN 50 UM/ML	2080	5902	283.75	0
	ACP	LU	DMN 50 UM/ML	1666	0214	12.85	0
	ACP	TE	DMN 50 UM/ML	1971	0303	15.37	0
007758012	ACT	LI1	0125-2 PCT.	2447	0299	12.22	0
007758012	ACT	LI2	0625-3 PCT.	2015	0313	15.53	0
007758012	ACT	LU1	0125-2 PCT.	1828	0223	12.20	0
007758012	ACT	LU2	0625-3 PCT.	2073	0246	11.87	0
007758012	ACT	TE1	0125-2 PCT.	2881	0207	7.19	2
007758012	ACT	TE2	0625-3 PCT.	2530	0261	10.32	2

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 505001 DETECTOR TA1537 SPECIES RHESUS DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	2665	0062	2.33	0
	A+T		***NO MATCH***	3079	0085	2.76	0
	A-C		DMSO	2597	0069	2.66	0
	ACP	LI	AAF 800 UG/ML	2899	0262	9.04	0
	ACP	LU	AAF 800 UG/ML	2577	0060	2.33	0
	ACP	TE	AAF 800 UG/ML	3459	0054	1.56	2
007758012	ACT	LI1	0125-2 PCT.	2492	0047	1.89	0
007758012	ACT	LI2	0625-3 PCT.	2274	0054	2.37	0
007758012	ACT	LU1	0125-2 PCT.	2040	0059	2.89	0
007758012	ACT	LU2	0625-3 PCT.	2260	0063	2.79	2
007758012	ACT	TE1	0125-2 PCT.	2468	0062	2.51	0
007758012	ACT	TE2	0625-3 PCT.	1903	0063	3.31	2

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 505101 DETECTOR TA1538 SPECIES RHESUS DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+6	MUT1 EP+0	FREQ1 EP-8	CONTAM
	A+C		AAF 800 UG/ML	0855	0050	5.85	0
	A+T		***NO MATCH***	0599	0053	8.85	0
	A-C		DMSO	0834	0035	4.20	0
	ACP	LI	AAF 800 UG/ML	0866	0746	86.14	0
	ACP	LU	AAF 800 UG/ML	0896	0041	4.58	0
	ACP	TE	AAF 800 UG/ML	0836	0047	5.62	0
007758012	ACT	LI1	0125-2 PCT.	0445	0043	9.66	0
007758012	ACT	LI2	0625-3 PCT.	0410	0042	10.24	0
007758012	ACT	LU1	0125-2 PCT.	0521	0036	6.91	0
007758012	ACT	LU2	0625-3 PCT.	0499	0026	5.21	0
007758012	ACT	TE1	0125-2 PCT.	0713	0036	5.05	0
007758012	ACT	TE2	0625-3 PCT.	0440	0029	6.59	0

REPORT EXR33 LITTON BIONETICS MUTAGENIC ACTIVITY SYSTEM
COMPOUND SUMMARY BACKUP DETAIL

CONTRACT 22374-2104 PROJECT 02468
EXPERIMENT 504802 DETECTOR 00004 SPECIES RHESUS DATE - 04/25/75

COMPOUND	TEST	ORG ID	CONCENTRATION	POPU EP+4	MUT1 EP+1	MUT2 EP+1	FREQ1 EP-5	FREQ2 EP-5	CONTAM
	A+C		DMN 90 UM/ML	1127	0025	0034	2.22	3.02	0
	A+T		***NO MATCH***	1427	0044	0039	3.08	2.73	0
	A-C		SALINE	1257	0038	0025	3.02	1.99	0
	ACP	LI	DMN 90 UM/ML	1322	0079	0077	5.98	5.82	0
	ACP	LU	DMN 90 UM/ML	1493	0036	0042	2.41	2.81	0
	ACP	TE	DMN 90 UM/ML	1139	0034	0045	2.99	3.95	0
007758012	ACT	LI1	0001-0 PCT.	0945	0026	0052	2.75	5.50	0
007758012	ACT	LI2	0005-1 PCT.	0886	0026	0036	2.93	4.06	6
007758012	ACT	LU1	0001-0 PCT.	0742	0016	0042	2.16	5.66	4
007758012	ACT	LU2	0005-1 PCT.	0881	0018	0030	2.04	3.41	1
007758012	ACT	TE1	0001-0 PCT.	0912	0024	0045	2.63	4.93	0
007758012	ACT	TE2	0005-1 PCT.	0864	0017	0055	1.97	6.37	0